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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/564,133	01/19/2007	Terry Victor Clapp	2143.000300/KDG	8863
23720	7590	06/27/2008	EXAMINER	
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/564,133	Applicant(s) CLAPP, TERRY VICTOR	
	Examiner Chad H. Smith	Art Unit 2874	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 10 January 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-53 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 24-27 is/are allowed.
- 6) ☒ Claim(s) 1-12, 16-23, and 28-53 is/are rejected.
- 7) ☒ Claim(s) 13-15 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 10 January 2006 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|----------------------------------------------------------------------------------------|-------------------------------------------------------------------|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>1/10/06</u> | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Drawings

The drawings are objected to under 37 CFR 1.83(a). The drawings must show every feature of the invention specified in the claims. Therefore, the curved edge of the slot must be shown or the feature(s) canceled from the claim(s). No new matter should be entered.

Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as “amended.” If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either “Replacement Sheet” or “New Sheet” pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Claim Objections

Claim 23 is objected to because of the following informalities: “dielectric” should read “device”. Appropriate correction is required.

Claim 37 recites the limitation "the optical medium" in lines 2 – 3. There is insufficient antecedent basis for this limitation in the claim. Examiner will interpret as "either first or second optical transmission mediums".

Allowable Subject Matter

Claims 13 – 15 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims. The following is a statement of reasons for the indication of allowable subject matter: The prior art of record, taken alone or in combination, fails to disclose or render obvious an opening formed in the substrate and an electro-optically active material deployed in the opening. Claims 14 and 15 are allowable strictly based on their dependency from allowable claim 13.

Claims 24 – 27 are allowed. The following is a statement of reasons for the indication of allowable subject matter: The prior art of record, taken alone or in combination, fails to disclose or render obvious a slot formed in the device layer having a non-zero radius of curvature and a phase adjusting element deployed in the slot. Claims 25 through 27 are allowable strictly based on their dependency from allowable claim 24.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

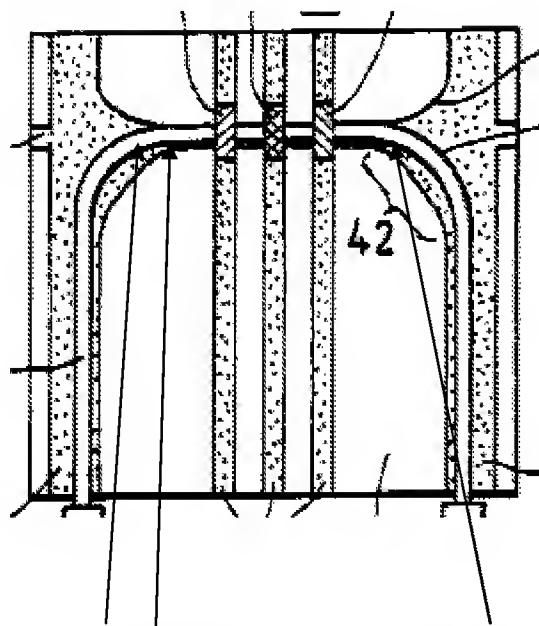
Art Unit: 2874

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1 – 12, 16 – 19, 28 – 36 and 39 are rejected under 35 U.S.C. 102(b) as being anticipated by Minemoto et al. (U.S. Patent # 5,699,461).

In Re claims 1 – 6, 9, 28 – 32, 34, 35 '461 teaches an apparatus, comprising: a first optical transmission medium formed in at least a portion of a device layer (10); a second optical transmission medium formed in at least a portion of the device layer; and a slot formed in at least a portion of the device layers (12), wherein the slot has at least one curved edge having a non-zero radius of curvature, and wherein the slot is disposed adjacent to the first and second transmission media (furthermore col. 15, line 52 and col. 16, lines 21 – 22 states the liquid crystal material is in the light path inherently making the fiber as at least two separates pieces at the edge of the slot).



1st optical transmission medium 2nd optical transmission medium

Curved edge

In Re claims 7 and 8, '461 teaches the slot edge and the waveguide end face being coplanar at the optical element 22, forming a 0 degree angle to one another (figure above).

In Re claims 10, 11 and 33, '461 teaches a polarizer (22).

In Re claims 12, 16, 17, and 36 '461 teaches a phase adjusting element (liquid crystal).

In Re claim 18, '461 teaches a thermosetting epoxy resin (col. 20, lines 18 – 21).

In Re claim 19, inherently the substrate when manufactured will set up in a preferred molecular orientation.

In Re claim 39, '461 teaches of a quarter wave plate introduced in the slot, which would be a refractive index modifier (col. 15, line 58).

Claims 41 – 51 and 53 are rejected under 35 U.S.C. 102(b) as being anticipated by Hirabayashi et al. (U.S. PG Pub. # 2002/0076161 A1).

In Re claims 41, 42, 50 and 49, '161 teaches a phase adjusting element for use in a phase adjustment system having a slot formed therein proximate a waveguide, comprising: a substrate (8-3) having a shape selected to permit at least a portion of the phase adjusting element (12-3, liquid crystal) to be introduced into the slot (trench); an opening formed in the substrate so that the opening is proximate the waveguide when the portion of the phase adjusting element is introduced in the slot (fig. 26, space between 13-3); at least one electrode formed proximate the opening (13-1); and an electro-optically active material deployed in the opening (13-6).

In Re claim 43, '161 teaches wherein the electro-optically active material is disposed within at least one of a polymer matrix and an inter-penetrating polymer network (par. 0033).

In Re claim 44, '161 teaches wherein the polymer comprises at least one of a carbon-based polymer, a heterogeneous molecular system, a siloxane, a ladder siloxane, a silicon-containing polymer, a dendrimer, and a supramolecular assembly (par. 0033).

In Re claim 45, '161 teaches wherein a refractive index of the electro-optically active material is variable in response to an applied electric field (par. 0219).

In Re claim 46, liquid crystalline material is birefringent.

In Re claim 47, '161 teaches wherein an orientation of the refractive index of the birefringent electro-optically active material is variable in response to the applied electric field (fig. 23C).

In Re claims 48 and 51, the phase adjusting element can be removed from the slot by any means necessary. Furthermore, it has been held that the recitation that an element is "capable of" performing a function is not a positive limitation but only requires the ability to so perform. It does not constitute a limitation in any patentable sense. *In re Hutchison*, 69 USPQ 138.

In Re claim 53, '161 teaches wherein forming the at least one electrode comprises forming a plurality of electrodes capable of providing at least a portion of an electric fringing field of a selected orientation in the opening. (fig. 23C).

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

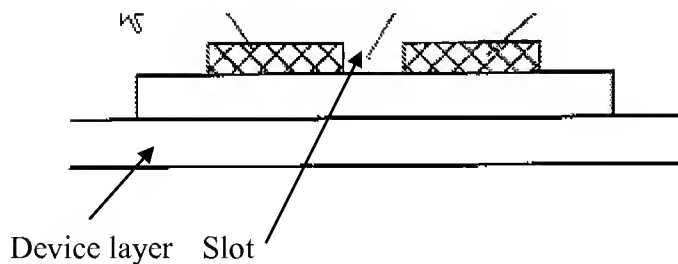
A person shall be entitled to a patent unless –

Art Unit: 2874

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claims 1, 20 – 23, 28 and 40 are rejected under 35 U.S.C. 102(e) as being anticipated by He et al. (U.S. Patent # 6,526,193 B1).

In Re claims 1, and 28 '193 teaches an apparatus, comprising: a first optical transmission medium formed in at least a portion of a device layer (12); a second optical transmission medium formed in at least a portion of the device layer; and a slot (40) formed in at least a portion of the device layers, wherein the slot has at least one curved edge, and wherein the slot is disposed adjacent to the first and second transmission media (fig. 5).



In Re claims 20 – 23, and 40 '193 teaches curved electrodes with non-zero radii of curvature parallel to the device layer that (figs. 5 and 6, 24 and 28, col. 3, lines 42 – 48).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

Art Unit: 2874

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claim 52 is rejected under 35 U.S.C. 103(a) as being unpatentable over Hirabayashi et al. (U.S. PG Pub. # 2002/0076161 A1) in view of Dumont et al. (U.S. PG Pub. # 2006/0084753 A1).

'161 teaches the method of claim 49 as previously discussed above, but is silent to forming the substrate from silicone. '753 teaches using silicone on substrates for its good mechanical strength (par. 0013). It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the teachings of '161's method with '753's teaching of using silicone to manufacture the substrate of the phase adjusting element as silicon possesses good mechanical strength.

Claims 37 and 38 are rejected under 35 U.S.C. 103(a) as being unpatentable over Minemoto et al. (U.S. Patent # 5,699,461) in view of Asakura et al. (U.S. Patent # 5,311,606).

'461 teaches the method of claim 34 as previously discussed above, but is silent to either the first or second optical transmission medium having an auxiliary dopant. '606 teaches using erbium doping for high amplification and superior noise characteristics (col. 1, lines 23 – 26). It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the teachings '461's method with '606's teaching of using erbium doping so that the sensor system will have high amplification and superior noise characteristics. Furthermore, as the fiber is laying in the substrate, it is making contact with the bottom surface of the slot.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Chad H. Smith whose telephone number is (571) 270-1294. The examiner can normally be reached on Monday-Thursday 7:30a.m. - 5:00p.m. EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Rodney Bovernick can be reached on 571-270-2344. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Chad H Smith/
Examiner, Art Unit 2874

/Sung H. Pak/
Primary Examiner, Art Unit 2874